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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC
701 FIFTH AVE
SUITE 5400
SEATTLE, WA 98104

EXAMINER	
PRINCE, JESSICA MARIE	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/500,453
Filing Date: March 10, 2005
Appellant(s): CHIANG ET AL.

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Jeremiah J. Baunach Reg. No. 44,527
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 09-09-2011 appealing from the Office action mailed 02-17-2011.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 5-7, 10-16, 25-26, and 30-33 are allowed.

Claims 34-46 are rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(**5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

Lee, J-W., "Target Bit Matching for MPEG-2 Video Rate Control," In Proceedings of the IEEE TENCON, New Delhi, India, December 17-19, 1998 pp. 66-69

5,644,504	Boice	7-1997
5,677,734	Oikawa	10-1997
5,802,213	Gardos	9-1998
5,923,376	Pullen	7-1999
6,947,378	Wu	9-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 34, 36, 37, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., Target Bit Matching for MPEG-2 Video Rate Control in view of Pullen et al., US-5,923,376.

As per **claim 34**, Lee teaches a method comprising: determining a relationship between first metric values and respective quantities of encoded video data (Lee discloses the normalized local activity is N_act_j is defined as:

$$N\_act_j = \frac{2 \times act_j + avg\_act}{act_j + 2 \times avg\_act} \qquad (11)$$

Further disclosed is for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory:

$$q_i = 2^C \times \gamma_i \qquad (13)$$

Where C is a parameter that controls the bit rate, and γ_i scaling factor which characterizes the properties of the current macroblock. Further disclosed is where we may use N_act_j in Eq. (11) as the scaling factor γ_i, for macroblock *i.* Further, while encoding the reference macroblock we adjust the initial quantization parameter such that the number of actual coding bits is close to the average number of coding bits B_{avg} for the macroblock. The value of C is then calculated from Eq. 13. 3.2 Reference Quantization Parameter and Eq. 13-18). Since Lee discloses the local activity is the scaling factor for the macroblock, and to adjust the quantization parameter such that the number of actual coding bits are close to the average number of coding bits (where the

number of coding bits is directly related to the target number of bits), which is used to calculate the parameter that controls the bit rate, it is clear to the examiner that the determined relationship (where the average bit rate is close to the target bit rate) among the quantization parameter and the parameter that controls the bit rate, which reads upon the claimed limitation), the first metric values generated by encoding reference video data from a reference video, <u>the reference video including a plurality of macroblocks,</u> using a metric function (we then select a reference macroblock that has the average scaling factor γ_{avg}. Since the reference block should characterize the coded pictures, we chose a MB_intra, MB_FORWARD, and MB_BACKWARDcoded macroblock for I, P, and B pictures, respectively. While encoding the reference macroblock, we adjust the initial quantization parameter Q_{init} such that the number of actual coding bits is close to the average number of coding bits B_{ang} for the macroblock. Since Lee discloses to select the reference macroblock that has the closest scaling factor, where the scaling factor is the normalized local activity, and to adjust the initial quantization parameter, it is clear to the examiner that Lee discloses to determine local activity of a reference block which reads upon the claimed limitation, 2.3 Adaptive Quantization. Since the reference block should characterize the coded pictures, we chose a MB_intra, MB_FORWARD, and MB_BACKWARDcoded macroblock for I, P, and B pictures, respectively, clearly the video includes I, P, B macroblocks, reading on the claimed limitation) and respective encoding parameters (quantization parameter q 3.2. Reference Quantization Parameter); generating second metric values from input

video data of the input video using respective second encoding parameters (Lee discloses where the reference quantization parameter of macroblock *i* is calculated as:

$$Q_i = Q_{ref} + \Delta \quad (21)$$

where Q_{ref} is the reference quantization parameter of the current macroblock, and Δ is the amount of quantization step size to be adjusted. Since the initial quantization is determined with respect to the reference quantization, and is used to determine the parameter that controls the bit rate, therefore, it is clear to the examiner that Lee discloses to use the bit rate control parameter with respect to the reference quantization parameter, which reads upon the claimed limitation); and selecting at least one of said second encoding parameters on the basis of a desired quantity of encoding video and the relationship between the fist metric values and the respective quantities of encoded data (Lee discloses the normalized local activity is N_act_j is defined as:

$$N\_act_j = \frac{2 \times act_j + avg\_act}{act_j + 2 \times avg\_act} \quad (11)$$

Further disclosed is for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory:

$$q_i = 2^C \times \gamma_i \quad (13)$$

Where C is a parameter that controls the bit rate, and γ_i scaling factor which characterizes the proprieties of the current macroblock. Further disclosed is where we may use N_act_j in Eq. (11) as the scaling factor γ_i, for macroblock *i*. Further, while encoding the reference macroblock we adjust the initial quantization parameter such that the number of actual coding bits is close to the average number of coding bits B_{avg}

for the macroblock. The value of C is then calculated from Eq. 13. 3.2 Reference Quantization Parameter and Eq. 13-18). Since Lee discloses the local activity is the scaling factor for the macroblock, and to adjust the quantization parameter such that the number of actual coding bits are close to the average number of coding bits (where the number of coding bits is directly related to the target number of bits), which is used to calculate the parameter that controls the bit rate, it is clear to the examiner that there is a relationship (where the average bit rate is close to the target bit rate) among the quantization parameter and the parameter that controls the bit rate, which reads upon the claimed limitation); and encoding the input video data using the selected at least one encoding parameter (2.1 Bit allocation).

Lee does not explicitly disclose to receiving an input video, <u>the input video including a plurality of</u> macroblocks distinct from the <u>plurality of macroblocks of</u> the reference video; a video encoder that is at least one of a configured hardware circuit and a programmed computer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate to receive input video containing macroblocks and where reference video contains macroblocks that are different (distinct) from the input video, in order to perform video encoding.

Lee does not explicitly disclose a video encoder that is at least one of a configured hardware circuit and a programmed computer.

However, Pullen teaches a video encoder that is at least one configured hardware circuit and a programmed computer (compression methods may be implemented by a general purpose computer executing instructions storing in a memory to generate a compressed representation of data set usually stored in a working memory (col.1 line 55-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Pullens' computer based method and system with Lee in order to run and process the disclosed algorithm of Lee.

As per **claim 36**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. In addition, Lee teaches the method of claim 34, wherein the determining the relationship between first metric values and respective quantities of encoded video data is performed as part of a calibration process, and wherein the receiving the input video occurs after the calibration process is performed (3.2 Proposed Algorithm).

As per **claim 37**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. In addition, Lee teaches the method of claim 34, wherein the relationship is a power law relationship ((3.2 Reference Quantization Parameter, Eq. (13)).

As per **claim 39**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. In addition, Lee teaches determining basic metric values from the metric function and basic encoding parameters ; and deriving metric values from the basic metric values (Lee discloses for estimating the reference quantization

parameter for each macroblock, we define the following equation based on the rate distortion theory: $q_i = 2^C \times \gamma_i$ (13). As understood by the examiner, the basic metric function is a quantization vector (see applicants disclosure [0054 - 0056] and table 2-3, and Lee discloses the reference quantization parameter is a vector, it is clear to the examiner that the reference quantization parameter reads upon the claimed limitation).

As per **claim 41**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. In addition, Lee teaches the method of claim 34, wherein the selecting (Introduction) the at least one of the second encoding parameters (Introduction) based on a desired quantity of encoded video data (Lee discloses the normalized local activity is N_act_j is defined as:

$$N\_act_j = \frac{2 \times act_j + avg\_act}{act_j + 2 \times avg\_act} \quad (11)$$

Further disclosed is for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory:

$$q_i = 2^C \times \gamma_i \quad (13)$$

Where C is a parameter that controls the bit rate, and γ_i scaling factor which characterizes the proprieties of the current macroblock. Further disclosed is where we may use N_act_j in Eq. (11) as the scaling factor γ_i, for macroblock *i.* Further, while encoding the reference macroblock we adjust the initial quantization parameter such that the number of actual coding bits is close to the average number of coding bits B_{avg} for the macroblock. The value of C is then calculated from Eq. 13. 3.2 Reference

Quantization Parameter and Eq. 13-18); and the relationship between the first metric values and the respective quantities of encoded video data is perform using the second metric values (Lee discloses where the reference quantization parameter of macroblock *i* is calculated as:

$$Q_i = Q_{ref} + \Delta \qquad (21)$$

where Q_{ref} is the reference quantization parameter of the current macroblock, and Δ is the amount of quantization step size to be adjusted. Since the initial quantization is determined with respect to the reference quantization, and is used to determine the parameter that controls the bit rate, therefore, it is clear to the examiner that Lee discloses to use the bit rate control parameter with respect to the reference quantization parameter, which reads upon the claimed limitation).

4. Claims 35 and 42, 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., Target Bit Matching for MPEG-2 Video Rate Control in view of Pullen et al., US-5,923,376 in view of Oikawa et al., US-5,677,734.

As per **claim 35**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. Lee is silent in regards to the method of claim 34 further including, after the determining relationship between first metric values and respective quantities of encoded video data and before receiving the input video, storing the relationship for use in the selecting at least one of the second encoding parameters based on the desired quantity of encoded video data and the relationship.

However, Oikawa teaches storing the relationship for use in the selecting at least one of the second parameters based on the desired quantity of encoded video data and

the relationship (a picture memory. Therefore, taking the teachings of a predetermined relationship with Oikawas' teaching of a memory now incorporates all the elements of claim 35. Now, Lee incorporating the memory Oikawa reads upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oikawa with Lee for providing improved image quality.

As per **claim 42**, which is substantially the same as claim 34, in addition to a memory configured to store a predetermined relationship between first metric values and respective quantities of encoded video; a predictor module, a selector module and a processor configured to execute the predictor module. Thus, the rejection and analysis made for claim 34 also applies here for common subject matter. In addition, Lee teaches a predictor module (fig. 1); a selector (Lee discloses where in order to obtain uniform picture quality within each picture within each picture, we should select an appropriate coding parameter for each MB, see Introduction. Although, Lee does not explicitly discloses a selector, the examiner notes that in order to perform the selection of the coding parameter, there must exist a device or module that selects, which reads upon the claimed limitation). Lee is silent in regards to memory configured to store a predetermined relationship between first metric and values and respective quantities of encoded video; a processor configured to execute the predictor module.

Lee is silent in regards to a processor configured to execute the predictor module.

However, Pullen discloses where compression methods may be implemented by a general purpose computer executing instructions stored in memory to generate a compressed representation of a data set usually stored in a memory, col. 1 line 55-58. Therefore, the combination of Lee (modified by Oikawa and Pullen) as whole disclose a computer based method and system, reading upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Pullens' computer based method and system with Lee in order to run and process the disclosed algorithm of Lee.

Lee (modified by Pullen) is silent in regards to memory configured to store a predetermined relationship between first metric and values and respective quantities of encoded video. However, Oikawa teaches a memory configured to store a predetermined relationship between first metric and values and respective quantities of encoded video (a picture memory. Therefore, taking the teachings of a predetermined relationship with Oikawas' teaching of a memory now incorporates all the elements of claim 42. Now, Lee incorporating the memory Oikawa reads upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oikawa with Lee (modified by Pullen) for providing improved image quality.

As per **claim 43**, Lee (modified by Pullen and Oikawa) as a whole teaches everything as claimed above, see claim 42. In addition, Lee teaches the method of

claim 42, wherein the relationship is a power law relationship ((3.2 Reference Quantization Parameter, Eq. (13)).

As per **claim 45**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. Lee is silent in regards to the method of claim 34 wherein the first and second encoding parameters are quantization vectors.

However, Oikawa teaches wherein the first and second encoding parameters are quantization vectors (the first quantization unit determines a quantization step in terms of a video segment made up of plural macro-blocks as a unit so that the quantity of quantized data is less than a pre-set data quantity, while the second quantization unit decision unit determines a quantization step in terms of the macro-blocks as a unit so that the quantity of quantized data is less than the pre-set data quantity. The quantization unit quantizes the digital video signals with the quantization steps determined by the first quantization step decision unit and the second quantization step decision unit. This enables the degree of quantization to be refined in a range of a pre-set data quantity of quantized data to render it possible to make effective utilization of redundant bits, thus assuring efficient encoding and improved picture quality, column 2 line 63 to column 3 line 4 and fig, 6. Therefore, it is clear to the examiner that Oikawa discloses to select the quantization step size based on the quantity of VLC data as shown in fig. 6, which reads upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oikawa with Lee (modified by Pullen) for providing improved image quality.

As per **claim 46**, Lee (modified by Pullen and Oikawa) as a whole teaches everything as claimed above, see claim 42. Lee is silent in regards to the video encoding module of claim 42 wherein the first and second encoding parameters are quantization vectors.

However, However, Oikawa teaches wherein the first and second encoding parameters are quantization vectors (the first quantization unit determines a quantization step in terms of a video segment made up of plural macro-blocks as a unit so that the quantity of quantized data is less than a pre-set data quantity, while the second quantization unit decision unit determines a quantization step in terms of the macro-blocks as a unit so that the quantity of quantized data is less than the pre-set data quantity. The quantization unit quantizes the digital video signals with the quantization steps determined by the first quantization step decision unit and the second quantization step decision unit. This enables the degree of quantization to be refined in a range of a pre-set data quantity of quantized data to render it possible to make effective utilization of redundant bits, thus assuring efficient encoding and improved picture quality, column 2 line 63 to column 3 line 4 and fig, 6. Therefore, it is clear to the examiner that Oikawa discloses to select the quantization step size based on the quantity of VLC data as shown in fig. 6, which reads upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oikawa with Lee (modified by Pullen) for providing improved image quality.

5. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., Target Bit Matching for MPEG-2 Video Rate Control in view of Pullen et al., US-5,923,376 in view of Wu et al., US-6,974,378.

As per **claim 38**, Lee (modified by Pullen) as a whole teaches everything as claimed above, see claim 34. In addition, Lee teaches the method of claim 34, wherein the metric function is one of at least: based on AC coefficients of discrete cosine transformation data generated from video data (Lee discloses where we may use N_act_j in Eq. (11) as the scaling factor γ_i as the scaling factor, for γ_i macroblock *i.* However, since a good measure of the human visual sensitivity is the power of AC coefficients normalized by the DC value, we can define the scaling factor:

$$\gamma_i = \sqrt{\frac{\sum_{j=0}^{3}\sum_{k=1}^{63} dct_{i,j,k}^2}{232}}\,\frac{128}{\max(DC, DC_{min})} \qquad (14)$$

Therefore, it is clear to the examiner that Lee discloses a metric function that is based on the AC coefficients of the macroblock normalized by the DC coefficients, which reads upon the claimed limitation). Lee is silent in regards to wherein the metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients.

However, Wu teaches wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients (The spatial complexity can be estimated using a weighted sum of the magnitudes of the AC coefficients for each macroblock of the I-Frame, column 8 line 12-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Wu with Lee (modified by Pullen) for providing improved picture quality.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., Target Bit Matching for MPEG-2 Video Rate Control in view of Pullen et al., US-5,923,376 in view of Boice et al., US-5,644,504.

As per **claim 40**, Lee (modified by Pullen) as whole teaches everything as claimed above, see claim 34. Lee is silent in regards to the method of claim 39, wherein the deriving metric values includes deriving the metric values from the basic metric values using shift and add operations.

However, Boice teaches using shift and add operations (Quantization is a process to determine the stepsize per macroblock. Stepsize is based on the light intensity variances of the macroblock. The average of intensity of the macroblock is first calculated. Variances of each block are then determined. The smallest variance is used to select the stepsize for the macroblock. In the processor described herein, the average intensity can be calculated by ADDACC and shift instructions, column 7 line 41-47). Therefore, it is clear to the examiner that Boice discloses to use shift and add operations, which reads upon the claimed limitation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Boice with Lee for more efficient image coding.

6. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., Target Bit Matching for MPEG-2 Video Rate Control in view of Pullen et al., US-5,923,376 in view of Oikawa et al., US-5,677,734, and in view of Wu et al., US-6,974,378.

As per **claim 44**, Lee (modified by Pullen and Oikawa) as a whole teaches everything as claimed above, see claim 42. In addition, Lee teaches the video encoding module of claim 42, where the metric function is one of at least: based on AC coefficients of discrete cosine transformation data generated from video data (Lee discloses where we may use N_act_j in Eq. (11) as the scaling factor γ_i as the scaling factor, for γ_i macroblock *i.* However, since a good measure of the human visual sensitivity is the power of AC coefficients normalized by the DC value, we can define the scaling factor:

$$\gamma_i = \sqrt{\frac{\sum_{j=0}^{3}\sum_{k=0}^{63} dct_{i,j,k}^2}{232}} \frac{128}{\max(DC, DC_{min})} \qquad (14)$$

Therefore, it is clear to the examiner that Lee discloses a metric function that is based on the AC coefficients of the macroblock normalized by the DC coefficients, which reads upon the claimed limitation).

Lee (modified by Pullen and Oikawa) is silent in regards to wherein the metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients.

However, Wu teaches wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients

(The spatial complexity can be estimated using a weighted sum of the magnitudes of the AC coefficients for each macroblock of the I-Frame, column 8 line 12-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Wu with Lee (modified by Pullen and Oikawa) for providing improved picture quality.

(10) Response to Argument

The examiners response to the arguments of the brief concerning the art rejection of claims 34-46 are as follows:

Appellant argues on pg. 8 that Lee, Pullen, Oikawa, Wu and Boice do not teach or suggest receiving an input video after determining a relationship between respective quantities of encoded video data and a first metric values that are generated by encoding reference video data from a reference video. Instead, Lee uses previously encoded macroblocks of the same video as part of its encoding algorithm, and does not teach or suggest using any other video apart from the video that is being encoded. Thus, Lee never suggests receiving an input video of macroblocks after determining such a relationship using a reference video.

The examiner respectfully disagrees. Lee discloses estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory: $q_i = 2^C \times \gamma_i$ where C is a parameter that controls the bit rate. In addition, Lee discloses in order to determine the value of C for each

frame from eq. 13, we need to pick a scaling factor y and a quantization parameter q. We first calculate the average value of the scaling factors. Since video is composed of a plurality of data , and the parameter C is calculated for each frame, it is clear that Lee teaches to calculate the parameter C for a plurality of frames. Further, the parameter C is calculated using an average scaling factor, and in order to calculate an average, another frame has to considered, which further suggest and teaches that Lee receives input video after calculating the parameter for an incoming frame. In addition, the examiner notes that Lee calculates the parameter C for each frame, however, a frame is composed of a plurality of macroblocks. Thus, Lee more than fairly suggest and teaches to receive input video after determining a relationship between the respective quantities of data (video data) and a first metric values (parameter C) that are generated by encoding reference video (video data includes both reference and non-reference data).

Appellant argues on pg. 8 nothing in Lee suggest receiving the current macroblock or any other macroblocks after determining a relationship between metric values generated by encoding reference video data from a reference video of plural macroblocks.

The examiner respectfully disagree and directs the appellant to response provided above.

Appellant argues on pg. 9 that Lee does not teach or suggest "generating second metric values from input video data of the input video using respective second encoding parameters”.

The examiner respectfully disagrees. Lee discloses while encoding the reference macroblock, we adjust the initial quantization parameter Qinit such that average number of coding bits is close to the average number of coding bits Bavg for the macroblock, 3.2 Reference Quantization Parameter and fig.1. In addition, video includes a plurality of video data (reference and non-reference data). Since video includes reference and non-reference video and Lee adjust the initial quantization parameter such that the such that average number of coding bits is close to the average number of coding bits Bavg for the macroblock, it is clear that an adjusted quantization parameter reads upon the (second metric values) of the video where the number of bits is the (encoding parameter).

Appellant argues that Lee does not describe an “input video including a plurality of macroblocks distinct from the plurality of macroblocks of the reference video. Thus, Lee cannot describe “first metric values” and “second metric values” generated as recited in claim 34. For at least these reasons, Lee does not teach or suggest "selecting at least one of the second encoding parameters based on a desired quantity of encoded video data and the relationship between the first metric values and the respective quantities of encoded video data.

The examiner respectfully disagrees. Lee does not explicitly disclose input video including a plurality of macroblocks distinct from the plurality of macroblocks of the reference video. However, it is obvious that when encoding video, the encoder receives input video (reference and non-reference) containing macroblocks, and the reference and non-reference video is (distinct) from each other. Lee discloses estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory: $q_i = 2^C \times \gamma_i$ where C is a parameter that controls the bit rate, Which read upon the "first metric values". Further Lee discloses while encoding the reference macroblock, we adjust the initial quantization parameter Qinit such that average number of coding bits is close to the average number of coding bits Bavg for the macroblock, which reads upon the "second metric values" 3.2 Reference Quantization Parameter. In addition, Lee teaches the value of C is calculated using the initial quantization parameter and the average scaling factors, eq. 18. Thus, Lee teaches where the initial quantization parameter is selected so that the number of coding bits is close to the average number of coding bits (desired quantity of data) with respect to the quantization parameter C (first metric) of the input video (respective quantity of encoded video data), which reads upon the claimed limitation.

Appellant argues on pg. 10 that claims 35-41 depend on claims 34 and thus are also nonobvious in view of the cited references for at least the same reasons present in the above discussion.

The examiner respectfully disagrees. For at least the reasons presented above in the discussion for showing claim 34 is obvious over the cited art, the examiner maintains that claims 35-41 are also obvious for depending on claim 41.

Appellant argues on pg. 10 that as discussed above, Lee does not teach or suggest receiving an input video that is distinct from a reference video. Oikiawa does not supply the missing teaching and instead is being cited simply for teaching the use of a memory.

The examiner respectfully disagrees. Lee does not explicitly disclose receiving an input video that is distinct from a reference video. However, the examiner notes that the video includes a plurality of video data; reference and non-reference video. Thus, it is obvious that Lee receives an input of video data that is distinct from reference video.

Appellant argues on pg. 10 that Lee and Pullen do not describe any selection from among plural second encoding parameters and Oikawa does not supply the missing teaching. Even if the prior art had suggested some selection between parameters rather than the determination of a single parameter from an equation as in Lee, the prior art still would not suggest making a selection based on a stored predetermined relationship that was determined based on reference video data of a reference video, because none of the references suggest any reference video distinct from the input video.

The examiner respectfully disagrees. Lee does not explicitly disclose input video including a plurality of macroblocks distinct from the plurality of macroblocks of the reference video. However, it is obvious that when encoding video, the encoder receives

input video (reference and non-reference) containing macroblocks, and the reference and non-reference video is (distinct) from each other.

Appellant agues on pg. 11 that claims 42-46 depend on claim 41 and thus are also nonobvious in view of the cited references for at least the same reasons presented in the above discussion.

The examiner respectfully disagrees. For at least the reasons presented above in the discussion for showing claims 42 is obvious over the cited art, the examiner maintains that claims 43-44, 46 are also obvious for depending on claim 42. In addition, for the at least the same reasons represented above discussing claim 41 is obvious over the cited prior art, the examiner maintains that claim 45 is also for depending upon claim 34.

Appellant argues on pg. 11 that Lee uses previously encoded macroblocks of the same video being encoded as part of its encoding algorithm, and does not teach using any other video apart from the video that is being encoded. Thus, assuming that the Examiner is interpreting the estimating the reference quantization factor for each macroblock of the same video currently being encoded as a “calibration process” it follows Lee does not disclose receiving any distinct input video after the calibration process.

The examiner respectfully disagrees. Lee discloses while encoding the reference macroblock, we adjust the initial quantization parameter Qinit such that the number of

actual coding bits is close to the average number of coding bits Bavg for the macroblock, 3.2 Reference Quantization Parameter. Lee does not explicitly disclose the input video includes a plurality of video data. However, it is obvious video includes a plurality of video data (macroblocks). Since video includes a plurality of macroblocks, and Lee discloses to the adjust the initial quantization parameter Qinit such that the number of actual coding bits is close to the average number of coding bits Bavg for the macroblocks, it is clear that Lee discloses to adjust (calibration process) the quantization for the reference blocks.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/JESSICA PRINCE/

Examiner, Art Unit 2485

Conferees:

/Andy S. Rao/

Primary Examiner, Art Unit 2486

December 6, 2011

/Jayanti K Patel/

Supervisory Patent Examiner, Art Unit 2485

December 9, 2011